example, and as an alternative to the Hatchek process, molding processes could be employed, and an extruder could be used instead of an accumulation roll.

Materials Discussion

The following preferred materials have been selected for manufacturing the cementitious products of this invention.

In the preferred embodiment, the rigid support member **11** includes a rigid polymer resin, such as, rigid polyvinyl chloride ("pvc"), fiberglass-reinforced epoxy or polyester, or a metal plate, sheet or lath. Suitable metallic materials include anodized or polymer-coated aluminum or copper, brass, bronze, stainless steel, or galvanized steel, in plate, sheet or lath form. If aluminum is selected, it should be coated wherever it comes in contact with the cementitious material of this invention, since it is prone to attack by alkali compositions. Similarly, carbon steel selections should be coated or galvanized in order to prevent rusting, especially in the first and second nailing flanges **18** and **19**. The metal plate or lath can be roll formed and punched in order to provide through-holes **33** and fastener receiving holes **32**. If a lath, scrim, or mesh construction is used, separate holes may not be necessary since the open construction of a lath, scrim, or mesh is ideal for mechanically locking with the cementitious layer **22** and is easily penetrated by fasteners such as nails and screws. With lath or scrim constructions, embedding within the cementitious layer **22** is an option, in which case, the rigid support member may contain corrugations, grooves perforations or ridges to assist in mechanically locking with the cementitious layer **22**.

Aggregates **25**, fibers **24**, dispersants, and a rheology-modifying agents can be selectively added to modify the properties of the cementitious layer **22**. The cementitious layer **22** most preferably includes a known fiber cement composition including wood fiber, silica sand and portland cement, with or without an acrylic modifier. A variety of additives can be included within the cementitious layer **22**, such as organic binders, dispersants, one or more aggregate materials **25**, fibers **24**, air entraining agents, blowing agents, or reactive metals. The identity and quantity of any additive will depend on the desired properties or performance criteria of both the cementitious layer **22** as well as the sheathing or trim product made therefrom.

Organic binders are simply polymers that when added to water under certain conditions form long chains that intertwine and capture the components of the mixture. As water is removed from the mixture, these long chains solidify and bind the structural matrix. Because of the nature of these organic binders, however, they also function to modify the rheology of a composition. Whether the organic material is a binder, or primarily affects the rheology is a matter of degree and is dependent on the concentration. In smaller amounts the organic material primarily affects the rheology. As the amount of organic material is increased, its ability to bind the particles together increases, although it also continues to affect the rheology.

Organic binders can also be added to increase the cohesive strength, "plastic-like" behavior, and the ability of the mixture to retain its shape when molded or extruded. They act as thickeners and increase the yield stress of the inorganically filled mixture, which is the amount of force necessary to deform the mixture. This creates high "green strength" in the molded or extruded product. Suitable organic binders include a variety of cellulose-, starch-, and protein-based materials (which are generally highly polar), all of which assist in bridging the individual particles together

Dispersants, on the other hand, act to decrease the viscosity and the yield stress of the mixture by dispersing the individual aggregates **25**, fibers **24**, and binding particles. This allows for the use of less water while maintaining adequate levels of workability. Suitable dispersants include any material which can be absorbed onto the surface of the binder particles or aggregates and which act to disperse the particles, usually by creating a charged area on the particle surface or in the near colloid double layer. The binders and dispersants can be introduced in the dry mixing step **210**, slurry forming step **212** and/or sprayed between layers **204** by a spray head **208** onto the accumulator roll **202**, for example.

It may be preferable to include one or more aggregate materials within the cementitious layer **22** in order to add bulk and decrease the cost of the mixture. Aggregates often impart significant strength properties and improve workability. An example of one such aggregate is ordinary silica sand or clay, which are completely environmentally safe, extremely inexpensive, and essentially inexhaustible.

In other cases, lightweight aggregates can be added to yield a lighter, and often more insulating, final product. Examples of lightweight aggregates are perlite, vermiculite, hollow glass spheres, aerogel, xerogel, pumice, and other lightweight rocklike materials. These aggregates are likewise environmentally neutral and relatively inexpensive.

Fibers may be added to the cementitious layer **22** in order to increase the interlaminar bond strength, compressive, tensile, flexural, and cohesive strengths of the wet material as well as the hardened articles made therefrom. Fiber should preferably have high tear and burst strengths (i.e., high tensile strength), examples of which include waste paper pulp, abaca, southern pine, hardwood, flax, bagasse (sugar cane fiber), cotton, and hemp. Fibers with a high aspect ratio of about 10 or greater work best in imparting strength and toughness to the moldable material.

From the foregoing, it can be realized that this invention provides reinforced cementitious sheathing products which are lighter in weight and more resistant to cracking than currently available commercial fiber cement products. The preferred corner trim board of this invention can use less than half of the cementitious material of a conventional trim board, but since it is reinforced with a rigid support member, it will be easier to work with and provide potentially greater durability. The cementitious layers of this invention can be joined to the rigid support member with mechanical and/or adhesive bonds, and the individual layers of the cementitious products of this invention can be further reinforced with rheological modifying agents to increase ILB strength by allowing fibers to displace and flow better across the laminated boundaries of the cementitious materials, or by adding mortar or cement bonding agents for adhesively bonding these layers together, or both. Although various embodiments have been illustrated, this is for the purpose of describing, and not limiting the invention. Various modifications, which will become apparent to one skilled in the art, are within the scope of this invention described in the attached claims.

What is claimed is:

1. An exterior siding member comprising a plurality of individual fibercement layers affixed to a rigid support member, wherein the individual fibercement layers comprise a curable non-gypsum cementitious material having fibers therein, and the layers are adhered to one another by one or more of interlaminar bond strength promoters, wherein one of the one or more interlaminar bond strength promoters comprises nano-sized magnesium alumino silicate and an